AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

Listing of Claims:

Claim 1 (Currently Amended): A data processing apparatus operable to identify at least one of a plurality of code words, forming a code word set, present in a marked version of a material item, the marked version having been formed by combining each of a plurality of parts of a code word with one of a plurality of units from which the material item is comprised, the apparatus comprising

a recovery processor operable to recover at least one part of the code word from a corresponding unit of the marked material item, and

a correlator operable to generate for the marked material unit a dependent correlation value by correlating the part of the code word recovered from the material unit with a corresponding part of at least one of a re-generated code word from the code word set, and

a detector operable to determine whether at least one of the code words is present in the marked material item from the dependent correlation value for the part of the code word exceeding a predetermined threshold, wherein

when the dependent correlation value does not exceed the predetermined threshold, the correlator is operable under control of the detector to iteratively increase a number of code word parts used to form the recovered part of the code word, ~~form the recovered part of the code word from~~ each code word ~~parts~~ part taken from successive material units, ~~the recovered part of the code word iteratively increasing in~~

each time the~~a~~ number of code word parts used to form the recovered part of the code word is iteratively increased, ~~and~~the correlator is operable to generate a dependent correlation ~~values~~value ~~for each iteratively increased recovered part of the code word~~by correlating the recovered part of the code word with corresponding parts of the re-generated code word, the

2

~~iteration~~iterative increasing of the recovered part of the code word continuing until the whole code word is recovered and correlated with the whole regenerated code word, or the predetermined threshold exceeded.

Claim 2 (Original): A data processing apparatus as claimed in Claim 1, wherein the detector is operable in combination with the correlator to form a dependent correlation value for a plurality of parts of the recovered code word, and if the correlation value exceeds the predetermined threshold for one of the dependent correlation values, the detector is operable to identify the code word as present according to a predetermined false detection probability.

Claim 3 (Original): A data processing apparatus as claimed in Claim 2, wherein the detector is operable in combination with the correlator to form the dependent correlation values by combining the parts of the code word recovered from successive material units, and by correlating the parts formed from successive material units with corresponding part of the regenerated code word.

Claim 4 (Original): A data processing apparatus as claimed in Claim 3, wherein the correlator is operable to form the dependent correlation values by combining the parts of the code word recovered from a first plurality of successive units with parts of the code word recovered from second plurality of successive units and correlating the combined parts with corresponding parts of the re-generated code word.

Claim 5 (Original): A data processing apparatus as claimed in Claim 1, wherein the correlator is operable under control of the detector

to combine the parts of the code word recovered from a first plurality of successive units, and to form the dependent correlation value for the combined parts, the detector being operable to detect the code word if the dependent correlation value exceeds the predetermined threshold and otherwise

to combine the parts of the code word recovered from a second plurality of successive units, the number of units corresponding to the first plurality, and to form the dependent correlation value for the combined parts, the detector being operable to detect the code word if the dependent correlation value exceeds the predetermined threshold and otherwise

to combine the parts of the code word recovered from the first plurality of successive units with parts of the code word recovered from the second plurality of successive units, and to form the dependent correlation value for the combined parts, the detector being operable to detect the code word if the dependent correlation value exceeds the predetermined threshold and otherwise

to combine the parts of the code word recovered from a third plurality of successive units, and to form the dependent correlation value for the combined parts, the detector being operable to detect the code word if the dependent correlation value exceeds the predetermined threshold and otherwise

to combine the parts of the code word recovered from a fourth plurality of successive units, the number of units corresponding to the third plurality, and to form the dependent correlation value for the combined parts, the detector being operable to detect the code word if the dependent correlation value exceeds the predetermined threshold and otherwise

to combine the parts of the code word recovered from the third plurality of successive units with parts of the code word recovered from the fourth plurality of successive units, and to form the dependent correlation value for the combined parts, the detector being operable to detect the code word if the dependent correlation value exceeds the predetermined threshold

and otherwise to form iteratively the first, second, third and fourth plurality of parts of the

recovered code word, and to determine whether the dependent correlation value exceeds the

threshold.

Claim 6 (Canceled).

Claim 7 (Original): A data processing apparatus as claimed in Claim 1, wherein the

detector and the correlator are operable in combination to form the dependent correlation

value for at least one selected code word re-generated from the set of code words, the code

word being selected from the set in accordance with the relative magnitudes of the dependent

correlation value formed for each code word of the set.

Claim 8 (Original): A data processing apparatus as claimed in Claim 1, wherein the

plurality of code words are formed from a first code word having a plurality of predetermined

pseudo-randomly distributed coefficients and by generating other code words of the set by

cyclically shifting the first code word, and the correlation value is formed for a plurality of

the code words by

forming a Fourier transform of the recovered code word,

forming a Fourier transform of the first code word of the set,

forming the complex conjugate of one of the Fourier transform of the recovered code

word and the Fourier transform of the regenerated code word,

forming intermediate product samples by multiplying each of the Fourier transform

samples of the recovered code word and the corresponding Fourier transform samples of the

first code word,

forming correlation samples by forming an inverse transform of the intermediate

product samples, each of the correlation value samples providing the correlation value for one

of the set of code words, wherein the forming a Fourier transform of the part of the recovered

code word comprises setting the remaining part of the recovered code word to zero, and

forming the Fourier transform of the recovered code word, and

the forming a Fourier transform of the first code word of the set comprises setting the

remaining part of the first code word to zero, and forming the Fourier transform of the first

code word.

Claim 9 (Original): A data processing apparatus as claimed in Claim 1, wherein the

code word has been introduced into the material item in the discrete cosine transform domain,

the apparatus comprising

a discrete cosine transform processor operable to transform the marked material item

and the original material item into the discrete cosine transform domain, wherein the recovery

processor is operable to generate the recovered code word by subtracting corresponding

discrete cosine transform coefficients of the original material version from discrete cosine

transform coefficients of the marked material version.

Claim 10 (Original): A data processing apparatus as claimed in Claim 1, wherein the

material is video material, the material units being video images.

Claim 11 (Currently Amended): A method of identifying one of a plurality of code

words, forming a code word set, present in a marked material item, the marked version

having been formed by combining each of a plurality of parts of a code word with one of a

plurality of units from which the material item is comprised, the method comprising:

recovering at least one part of the code word from a corresponding plurality of units of the marked material item, and

generating for the marked material unit a dependent correlation value by correlating the part of the code word recovered from the material unit with a corresponding part of at least one of a re-generated code words from the code word set, and

determining whether at least one of the code words is present in the marked material item from the dependent correlation value for the part of the code word exceeding a predetermined threshold, and

when the dependent correlation value does not exceed the predetermined threshold, ~~forming the recovered part of the code word from code word parts from successive material units the recovered part of the code word~~ iteratively increasing ~~in~~ a number of code word parts used <u>to form the recovered part of the code word, each code word part taken from successive material units, and each time the number of code word parts used to form the recovered part of the code word is iteratively increased,</u>~~and generating dependent correlation values for each iteratively increased recovered part of the code word by correlating with corresponding parts of the re-generated code word, the iteration~~

<u>generating a dependent correlation value by correlating the recovered part of the code word with the corresponding parts of the re-generated code word, the iterative increasing of the recovered part of the code word</u> continuing until the whole code word is recovered and correlated with the whole regenerated code word, or the predetermined threshold exceeded.

Claim 12 (Original): A method of identifying as claimed in Claim 11, wherein the generating a dependent correlation value comprises

forming a dependent correlation value for each of a plurality of parts of the recovered code word, and if the correlation value exceeds the predetermined threshold for one of the dependent correlation values,

identifying the code word as present according to a predetermined false detection probability.

Claim 13 (Original): A method of identifying as claimed in Claim 12, wherein the generating a dependent correlation value includes forming the dependent correlation values by combining the parts of the code word recovered from successive material units, and by correlating the parts formed from successive units with corresponding part of the regenerated code word.

Claim 14 (Original): A method of identifying as claimed in Claim 13, wherein the generating a dependent correlation value includes forming the dependent correlation values by combining the parts of the code word recovered from a first plurality of successive units with parts of the code word recovered from second plurality of successive units and correlating the combined parts with corresponding parts of the re-generated code word.

Claim 15 (Original): A method of identifying as claimed in Claim 11, wherein the generating a dependent correlation value includes

combining the parts of the code word recovered from a first plurality of successive units,

forming the dependent correlation value for the combined parts, and detecting the code word if the dependent correlation value exceeds the predetermined threshold and otherwise

combining the parts of the code word recovered from a second plurality of successive units, the number of units corresponding to the first plurality,

forming the dependent correlation value for the combined parts, and detecting the code word if the dependent correlation value exceeds the predetermined threshold and otherwise

combining the parts of the code word recovered from the first plurality of successive units with parts of the code word recovered from the second plurality of successive units,

forming the dependent correlation value for the combined parts, and detecting the code word if the dependent correlation value exceeds the predetermined threshold and otherwise

combining the parts of the code word recovered from a third plurality of successive units,

forming the dependent correlation value for the combined parts, and detecting the code word if the dependent correlation value exceeds the predetermined threshold and otherwise

combining the parts of the code word recovered from a fourth plurality of successive units, the number of units corresponding to the third plurality,

forming the dependent correlation value for the combined parts, and detecting the code word if the dependent correlation value exceeds the predetermined threshold and otherwise

combining the parts of the code word recovered from the third plurality of successive units with parts of the code word recovered from the fourth plurality of successive units,

forming the dependent correlation value for the combined parts, and detecting the code word if the dependent correlation value exceeds the predetermined threshold and otherwise

forming iteratively the first, second, third and fourth plurality of parts of the recovered

code word, and

determining whether the dependent correlation value exceeds the threshold.

Claim 16 (Canceled).

Claim 17 (Currently Amended): An encoding data processing apparatus operable to

form a marked version of a material item by combining each version of a material item with

one or more of a plurality of code words from a code word set, each of a plurality of parts of

the code word including a plurality of code word coefficients being combined with one of a

plurality of units from which the material item is comprised by adding each coefficient of the

code word part to an element of the material item unit so that each of the plurality of units has

one of the code word parts combined therewith, wherein successive parts of the code word

are combined respectively with successive units of the material item with the effect that the

one or more code words in the material item sequence can be identified by a detecting data

processing apparatus, the detecting data processing apparatus comprising:

a recovery processor operable to recover at least one part of the code word from a

corresponding unit of the marked material item, and

a correlator operable to generate for the marked material unit a dependent correlation

value by correlating the part of the code word recovered from the material unit with a

corresponding part of at least one of a re-generated code words from the code word set, and

a detector operable to determine whether at least one of the code words is present in

the marked material item from the dependent correlation value for the part of the code word

exceeding a predetermined threshold, wherein

when the dependent correlation value does not exceed the predetermined threshold, the correlator is ~~operate~~ <u>operable</u> under control of the detector to <u>iteratively increase a number of code word parts used to form the recovered part of the code word, each code word part taken from successive material units,</u>

<u>each time the number of code word parts used to form the recovered part of the code word is iteratively increased, the correlator is operable to generate a dependent correlation value by correlating the recovered part of the code word with corresponding parts of the re-generated code word, the iterative increasing of the recovered part of the code word</u>

~~form the recovered part of the code word from code word parts from successive material units the recovered part of the code word iteratively increasing in a number of code word parts used and to generate dependent correlation values for each iteratively increased recovered part of the code word by correlating with corresponding parts of the re-generated code word, the iteration~~ continuing until the whole code word is recovered and correlated with the whole regenerated code word, or the predetermined threshold exceeded.

Claim 18 (Original): An encoding data processing apparatus as claimed in Claim 17, wherein the plurality of code words are formed from a first code word having a plurality of predetermined pseudo-randomly distributed coefficients and by generating other code words of the set by cyclically shifting the first code word.

Claims 19-20 (Canceled).

Claim 21 (Currently Amended): A system for identifying versions of a material item, the system comprising:

an encoding data processing apparatus operable to form marked versions of the

material item by combining each version with at least one of a plurality of code words from a

code word set, each of a plurality of parts of the code word being combined with one of a

plurality of units from which the version of the material item is comprised, and

a detecting data processing apparatus operable to identify at least one of the plurality

of code words present in a marked version of the material item, the detecting data processing

apparatus comprising

a recovery processor operable to recover at least one part of a code word from a

corresponding unit of the marked material item, and

a correlator operable to generate for the marked material unit a dependent correlation

value by correlating the part of the code word recovered from the material unit with a

corresponding part of at least one of a re-generated code word from the code word set, and

a detector operable to determine whether at least one of the code words is present in

the marked material item from the dependent correlation value for the part of a code word

exceeding a predetermined threshold wherein

when the dependent correlation value does not exceed the predetermined threshold,

the correlator is operable under control of the detector to iteratively increase a number of

code word parts used to form the recovered part of the code word, each code word part taken

from successive material units,

each time the number of code word parts used to form the recovered part of the code

word is iteratively increased, the correlator is operable to generate a dependent correlation

value by correlating the recovered part of the code word with corresponding parts of the re-

generated code word, the iterative increasing of the recovered part of the code word ~~forming~~

~~the recovered part of the code word from code word parts from successive material units the~~

~~recovered part of the code word iteratively increasing in a number of code word parts used~~

~~and generating dependent correlation values for each iteratively increased recovered part of~~

~~the code word by correlating with corresponding parts of the re-generated code word, the~~

~~iteration~~ continuing until the whole code word is recovered and correlated with the whole

regenerated code word, or the predetermined threshold exceeded.

Claim 22 (Original): A computer program providing computer executable

instructions, which when loaded on to a data processor causes the data processor to perform

the method according to Claim 11.

Claim 23 (Canceled).

Claim 24 (Original): A medium carrying a computer program as claimed in Claim

22.

Claim 25 (Canceled).

Claim 26 (New): The data processing apparatus according to Claim 1, wherein the

iterative increasing of the number of code word parts used increases the number by a factor

two for each increase.

Claim 27 (New): The method of identifying one of the plurality of code words

according to Claim 11, wherein the iterative increasing of the number of code word parts

used increases the number by a factor two for each increase.

Claim 28 (New): The encoding data processing apparatus according to Claim 17, wherein the iterative increasing of the number of code word parts used increases the number by a factor two for each increase.

Claim 29 (New): The system for identifying versions of the material item according to Claim 21, wherein the iterative increasing of the number of code word parts used increases the number by a factor two for each increase.